

## **Indicator: Life Expectancy at Birth (075)**

Life expectancy at birth is often used to appraise the overall health of a given population (NCHS, 2003). Changes in life expectancy over time are commonly used to describe trends in mortality. Life expectancy is the average number of years at birth a person could expect to live if current mortality trends were to continue for the rest of that person's life.

This indicator is based on data from the National Vital Statistics System (NVSS) which registers virtually all deaths and births nationwide. The temporal coverage of the data is from 1933 to present and data are collected from all 50 States and the District of Columbia.

### **What the Data Show**

Figure 075 presents the historical trends in life expectancy between 1940 and 2000 showing an upward trend in life expectancy in the United States over time. Life expectancy at birth has increased throughout the 20<sup>th</sup> and now into the 21<sup>st</sup> century. The overall life expectancy was a record high in 2002 at 77.3 years, a slight increase from 77.0 years in 2000 and 77.2 years in 2001. This follows seven consecutive years of increases.

Life expectancy continues to increase for both males (73.9 years in 1999 to 74.5 years in 2002) and females (79.4 years in 1999 to 79.9 years in 2002). The gap in life expectancy between males and females widened from 2.0 years to 7.8 years between 1900 and 1979. Recently, this gap narrowed for the year 2000 and remained constant for 2001 and 2002 with a difference of 5.4 years between males and females (Figure 075).

The increase in life expectancy among African Americans reported for 1999 continued in 2001 and 2002 at 72.2 and 72.3 years, respectively. The difference in life expectancy between the African American and White populations was 5.4 years in 2002. In 2002, White females continued to have the highest life expectancy at 80.3 years, followed by African American females at 75.6 years, White males at 75.1 years and African American males at 68.8 years (NCHS 2004).

### **Indicator Limitations**

- Life expectancy at birth is strongly influenced by infant and child mortality rates. It is important to consider such influences when making comparisons among subgroups since differences in life expectancy among certain subgroups may be mostly attributed to differences in prenatal care and other important determinants of infant and child mortality.
- Life expectancy in the ROE03 was reported to be 76.9 years for 2000 (NCHS 2002). Life expectancies for 2000 were revised and computed using population counts from Census 2000 which replaced the life expectancy for 2000 using 1990-based postcensal estimates (NCHS 2003).

### **Data Sources**

National Center for Health Statistics (NCHS). 2003. Health, United States, 2003. Hyattsville, Maryland. 2003. <http://www.cdc.gov/nchs/data/hus/hus03.pdf>

See Table 27 <http://www.cdc.gov/nchs/data/hus/tables/2003/03hus027.pdf>

National Center for Health Statistics (NCHS). 2004. Deaths Final Data 2002. National Vital Statistics Volume 53 (5). [http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf). See Table 7

## **References**

National Center for Health Statistics (NCHS). 2002. Health, United States, 2002. Hyattsville, Maryland.

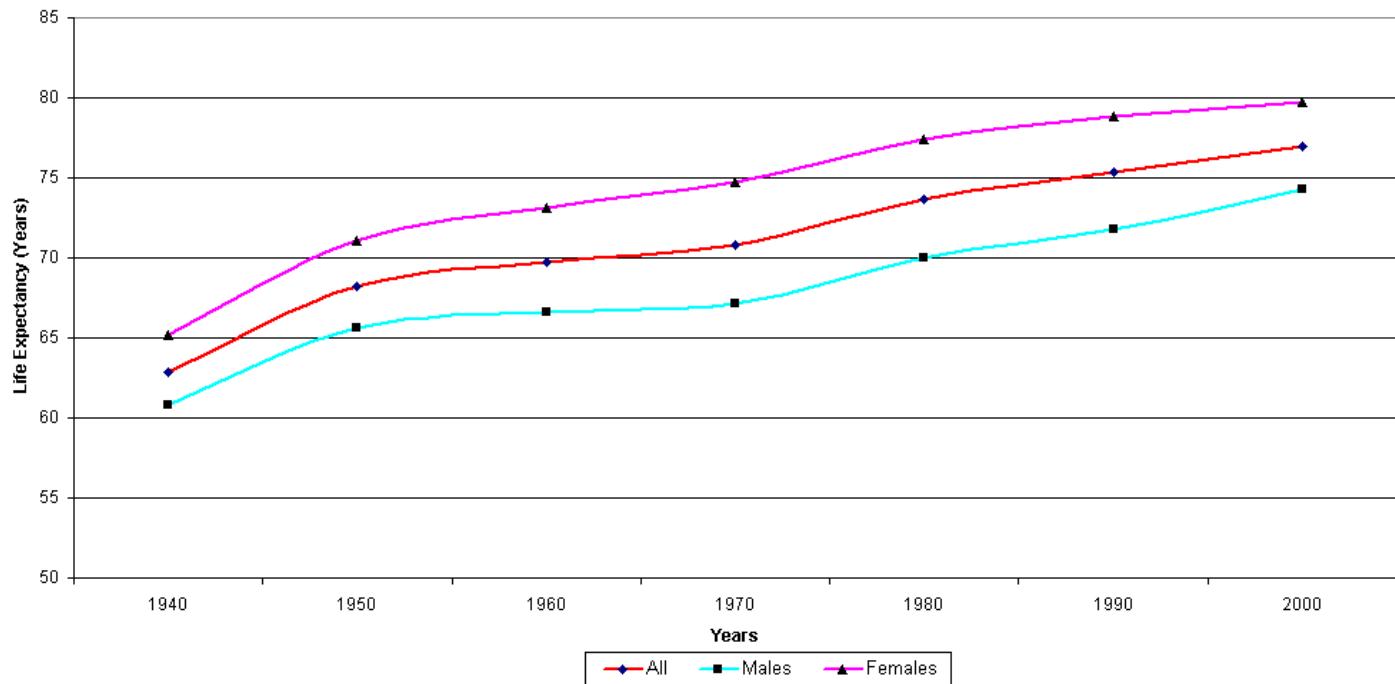
NCHS. 2003. Health, United States, 2003. Hyattsville, Maryland. 2003

NCHS. 2004. Deaths Final Data 2002. National Vital Statistics Volume 53 (5)

[http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf). See Table 7.

## Graphics

Figure 075: National Trends in Life Expectancy Between 1940 and 2000



Source: National Center for Health Statistics. Health ,United States, 2003  
<http://www.cdc.gov/nchs/data/hus/tables/2003/03hus027.pdf>

## R.O.E. Indicator QA/QC

**Data Set Name:** LIFE EXPECTANCY

**Indicator Number:** 075 (89104)

**Data Set Source:** CDC, NCHS

**Data Collection Date:** ongoing

**Data Collection Frequency:** 1 yr.

**Data Set Description:** Life Expectancy

**Primary ROE Question:** What are the trends in health status in the U.S.?

### Question/Response

- T1Q1** Are the physical, chemical, or biological measurements upon which this indicator is based widely accepted as scientifically and technically valid?

The National Vital Statistics System (NVSS) is the oldest and most successful example of inter-governmental data sharing in Public Health and the shared relationships, standards, and procedures form the mechanism by which NCHS collects and disseminates the Nation's official vital statistics. The methodology for collecting vital statistics is standardized and outlined in "Model State Vital Statistics Act and Regulations" Revised April 1995, DHHS publication (PHS) 95-1115 (<http://www.cdc.gov/nchs/data/misc/mvsact92aacc.pdf>).

- T1Q2** Is the sampling design and/or monitoring plan used to collect the data over time and space based on sound scientific principles?

Yes. The National Vital Statistics System is responsible for the Nation's official vital statistics. These vital statistics are provided through State-operated registration systems. Standard forms for the collection of data and model procedures for the uniform registration of the events are developed and recommended for State use through cooperative activities of the States and the NCHS (<http://www.cdc.gov/nchs/data/dvs/DEATH11-03final-ACC.pdf>). U.S. Standard Death Certificates are revised periodically. Most state certificates conform closely in content and arrangement to the standard certificate recommended by NCHS and all certificates contain a minimum data set specified by NCHS. Demographic information on the death certificate is provided by the funeral director based on information supplied by an informant. A physician, medical examiner, or coroner provides medical certification of cause of death. Life expectancy is determined from mortality data as explained at

[http://www.cdc.gov/nchs/data/nvsr/nvsr51/nvsr51\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr51/nvsr51_05.pdf).

- T1Q3** Is the conceptual model used to transform these measurements into an indicator widely accepted as a scientifically sound representation of the phenomenon it indicates?

Yes. The data collected by NVSS are routinely referenced and used in epidemiological studies.

- T2Q1** To what extent is the indicator sampling design and monitoring plan appropriate for answering the relevant question in the ROE?

Virtually all deaths are registered with the NVSS nationwide. The temporal coverage of the data is from 1933 to present. Data are collected from all 50 States including the District of Columbia.

- T2Q2** To what extent does the sampling design represent sensitive populations or ecosystems?

The data set has nationwide death reporting, including sensitive populations.

- T2Q3** Are there established reference points, thresholds or ranges of values for this indicator that unambiguously reflect the state of the environment?

Not applicable

- T3Q1** What documentation clearly and completely describes the underlying sampling and analytical procedures used?

The sampling and quality assurance information can be found in “Model State Vital Statistics Act and Regulations” Revised April 1995, DHHS publication (PHS) 95-1115 (<http://www.cdc.gov/nchs/data/misc/mvsact92aacc.pdf>). Data for Tables was extracted from these two sources: National Center for Health Statistics (NCHS). 2004. Health, United States, 2004. Hyattsville, Maryland. 2003. <http://www.cdc.gov/nchs/data/hus/hus03.pdf> See Table 27 <http://www.cdc.gov/nchs/data/hus/tables/2003/03hus027.pdf> National Center for Health Statistics (NCHS). 2004. Deaths Final Data 2002. National Vital Statistics vol 53 no. 5 [http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf); see Table 7

- T3Q2** Is the complete data set accessible, including metadata, data-dictionaries and embedded definitions or are there confidentiality issues that may limit accessibility to the complete data set?

The data can be accessed up to the county level through the electronic data warehouse for CDC at <http://wonder.cdc.gov>. Individual level data are not available due to confidentiality issues. Data for Tables was extracted from these two sources: National Center for Health Statistics (NCHS). 2004. Health, United States, 2004. Hyattsville, Maryland. 2003. <http://www.cdc.gov/nchs/data/hus/hus03.pdf> See Table 27 <http://www.cdc.gov/nchs/data/hus/tables/2003/03hus027.pdf> National Center for Health Statistics (NCHS). 2004. Deaths Final Data 2002. National Vital Statistics vol 53 no. 5 [http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf); see Table 7

- T3Q3** Are the descriptions of the study or survey design clear, complete and sufficient to enable the study or survey to be reproduced?

Yes. Virtually all deaths from the 50 states, including District of Columbia, submit mortality data to the NVSS at NCHS. The recommended certificate of death is posted at <http://www.cdc.gov/nchs/data/dvs/DEATH11-03final-ACC.pdf>.

- T3Q4** To what extent are the procedures for quality assurance and quality control of the data documented and accessible?

See answer to T3Q1

- T4Q1** Have appropriate statistical methods been used to generalize or portray data beyond the time or spatial locations where measurements were made (e.g., statistical survey inference, no generalization is possible)?

Not applicable

**T4Q2** Are uncertainty measurements or estimates available for the indicator and/or the underlying data set?

Not applicable

**T4Q3** Do the uncertainty and variability impact the conclusions that can be inferred from the data and the utility of the indicator?

Not applicable

**T4Q4** Are there limitations, or gaps in the data that may mislead a user about fundamental trends in the indicator over space or time period for which data are available?

Life expectancy at birth is strongly influenced by infant and child mortality rates. Life expectancy in the Draft Report on the Environment was reported to be 76.9 years for 2000. Life expectancies for 2000 were revised and computed using population counts from Census 2000 which replaced the life expectancy for 2000 using 1990-based postcensal estimates.